

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re the Application of: **Juichi KUBO et al.**

Art Unit: **1747**

Application Number: **10/572,377**

Examiner: **Daniel McNally**

Filed: **February 1, 2007**

Confirmation Number: **9876**

For: **OPTICAL FIBER WIRING METHOD AND ITS DEVICE**

Attorney Docket Number: **062284**

Customer Number: **38834**

SUBMISSION OF APPEAL BRIEF

Mail Stop: Appeal Brief-Patents

Commissioner for Patents

December 13, 2011

P.O. Box 1450

Alexandria, Virginia 22313-1450

Sir:

Applicants submit herewith an Appeal Brief in the above-identified U.S. patent application.

Attached please find a check in the amount of \$310.00 to cover the cost for the Appeal Brief. If any additional fees are due in connection with this submission, please charge Deposit Account No. 50-2866.

Respectfully submitted,

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

APPEAL BRIEF FOR THE APPELLANTS

Ex parte Juichi KUBO et al. (Appellants)

OPTICAL FIBER WIRING METHOD AND ITS DEVICE

Application Number: **10/572,377**

Filed: **February 1, 2007**

Appeal No.: **Not Yet Assigned**

Art Unit: **1747**

Examiner: **Daniel McNally**

Submitted by:
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December 13, 2011

BRIEF ON APPEAL

(I) REAL PARTY IN INTEREST

The real party in interest is **MUSASHI ENGINEERING, INC.**, by an assignment recorded in the U. S. Patent and Trademark Office on **February 1, 2007**, at Reel **018839**, Frame **0932**.

(II) RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences known to appellant, appellant's legal representative, or assignee that will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(III) STATUS OF CLAIMS

Claims 1-13 are pending in the application.

Claims 7-11 and 13 are rejected under 35 U.S.C. 112, second paragraph, which rejection is not appealed. Applicants will amend "the adhesive" to --an adhesive-- when the rejections under 35 U.S.C. 103(a) are reversed.

Claims 1-13 are rejected under 35 U.S.C. 103(a), which rejections are appealed. The appealed claims appear in the Claims Appendix.

(IV) STATUS OF AMENDMENTS

No amendments have been filed subsequent to the rejection.

(V) SUMMARY OF THE INVENTION

The present invention relates to an optical fiber wiring apparatus.

According to the optical fiber wiring method according to claim 1, an optical fiber is fed to pass through an adhesive ejecting nozzle having an inner diameter larger than an outer diameter of the optical fiber. An adhesive is supplied to the adhesive ejecting nozzle. Thus, the surface of the optical fiber is coated with the adhesive. The amount of the adhesive applied to the optical fiber is kept constant by controlling an air pressure for pushing out the adhesive. An optical wiring is formed on a surface of a substrate while the optical fiber and the adhesive are simultaneously ejected from the adhesive ejecting nozzle. ([0006])

The optical fiber wiring apparatus of claim 7 has three elements: a liquid material ejecting unit, a controller, and a stage for supporting a substrate. The liquid material ejecting unit has a liquid material ejecting nozzle. The inner diameter of the liquid material ejecting nozzle is larger than the outer diameter of the optical fiber. The optical fiber and the adhesive can be simultaneously fed through the nozzle. The controller controls an air pressure for pushing out the adhesive. The stage supports the substrate on which the optical fiber is to be wired. The liquid material ejecting unit and the stage are movable relative to each other ([0009]). The

adhesive is pushed out by an air pressure and the air pressure is controlled by a controller.

([0020]).

According to the present invention, without expensive equipment, it becomes possible to form large-sized wiring or wiring for connection between substrates. Also, since the wiring is fixed by an adhesive, stable and space-saving wiring can be realized, and fiber management regarding how the optical fibers are connected is easy to perform even when the number of optical fibers increases. Further, the present invention can form wirings on a substrate or on a plate connecting a plurality of substrates. ([0010])

(VI) GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1, 3, 4, 7-9 are rejected under 35 U.S.C. 103(a) for allegedly being obvious over Swiggett et al. (US 4,693,778, "Swiggett") in view of Hisatsune (JP 61-62575A) and Ikushima et al. (WO 02/103202A1, relying upon US 2005/0063839 as an English equivalent, "Ikushima").

Claims 2, 10-13 are rejected under 35 U.S.C. 103(a) for allegedly being obvious over Swiggett, Hisatsune and Ikushima, and further in view of Keyworth et al. (US 5,534,101, "Keyworth").

Claim 5 is rejected under 35 U.S.C. 103(a) for allegedly being obvious over Swiggett, Hisatsune, and Ikushima and further in view of Hawkins (US 3,742,107).

Claims 6, and 10 are rejected under 35 U.S.C. 103(a) for allegedly being obvious over Swiggett, Hisatsune, and Ikushima and further in view of Yamaguchi et al. (US 2001/0011413, herein "Yamaguchi").

Claims 12 and 13 are rejected under 35 U.S.C. 103(a) for allegedly being obvious over Swiggett, Hisatsune and Ikushima, and further in view of Inaba et al. (US 2002/0112821, herein "Inaba").

Claims 1, 3, 4, 7-9 are rejected under 35 U.S.C. 103(a) for allegedly being obvious over Hisatsune in view of Swiggett et al. and Ikushima et al.

Claims 2, 10-13 are rejected under 35 U.S.C. 103(a) for allegedly being obvious over Hisatsune, Swiggett and Ikushima, and further in view of Keyworth et al.

Claim 5 is rejected under 35 U.S.C. 103(a) for allegedly being obvious over Hisatsune, Swiggett and Ikushima and further in view of Hawkins.

Claims 6, and 10 are rejected under 35 U.S.C. 103(a) for allegedly being obvious over Hisatsune, Swiggett and Ikushima and further in view of Yamaguchi et al.

Claims 12 and 13 are rejected under 35 U.S.C. 103(a) for allegedly being obvious over Hisatsune, Swiggett and Ikushima, and further in view of Inaba et al.

(VII) ARGUMENT

1. Claims 1, 3, 4, 7-9 are not obvious over Swiggett in view of Hisatsune And Ikushima et al. Under 35 U.S.C. 103(a).

In the Office Action of 7/22/2011, the Examiner alleged as follows:

With respect to claim 1, Swiggett discloses an optical fiber wiring method (column 1, lines 10-13; column 2, lines 22-48). The method comprises feeding an optical fiber (conductor 32) to pass through a nozzle (guide housing 78) having an inner diameter larger than an outer diameter of the optical fiber (32), wherein the optical fiber (32) is coated with an adhesive

(column 3, lines 26-40), and forming optical wiring on a surface of a substrate by ejecting the adhesive coated optical fiber (32) (column 3, lines 5-26). Swiggett discloses a nozzle (78) feeding the adhesive coated optical fiber (32), but is silent as to obtaining the optical fiber coated with the adhesive on the fiber surface by simultaneously ejecting the optical fiber and the adhesive from the adhesive ejecting nozzle. Swiggett is therefore also silent as to the adhesive applied to the optical fiber being held constant by controlling an air pressure for pushing out the adhesive.

(Office Action of 7/22/2011, page 3). Swiggett describes as follows:

An apparatus for scribing a conductor to a surface of a substrate in a predetermined pattern between two points on said surface, each of said points defining a terminal point, said **conductor being coated with a coating which is non-tacky and non-blocking in its coated state but activatable to be an adhesive at the time the conductor is applied to said surface and to return to a non-tacky state after said conductor is fixed to said surface**, said apparatus including means for feeding said coated conductor to the first of the pair of terminal points on said surface to be connected by said conductor, means for supplying the end of said conductor to said first terminal point on said surface, **tacking means comprising radiant heating means directed at a point on the conductor adjacent the terminal point to activate said adhesive coating to a tacky state** and a tacker for fixing the supplied end of said conductor to said first terminal point prior to scribing a conductor path, means for moving said surface and said conductor feeding means relative to each other along a predetermined path from said first of said pair of terminal points to the second of said pair of terminal points, said radiant means activating said coating to an adhesive state as said conductor is applied to said surface, pressure means for urging said conductor with said activated adhesive coating into contact with said surface along said predetermined path, means for cutting the end of said conductor, means for applying said cut end of said conductor to said second of said terminal points and means for fixing said conductor end to said second terminal point.

(Swiggett, column 10, lines 9-39, claim 1). Thus, according to Swiggett, the conductor is already coated with a coating which is non-tacky and non-blocking in its coated state, and the coating is activated to become adhesive when the conductor is applied to the surface. Thus, in Swiggett, there is no need to coat the optical fiber with adhesive in the wiring process.

In order to remedy the deficiencies of Swiggett, the Examiner cited Hisatsune. The Examiner alleged:

Hisatsune discloses a method of applying an adhesive to a wire. The method comprises feeding a wire (3) to pass through an adhesive ejecting nozzle (nozzle device 5) having an inner diameter larger than an outer diameter of the wire (3) to thereby obtain the wire coated with the adhesive (4) on the fiber surface (Figure 2; page 2-3). Hisatsune discloses the adhesive (4) and wire (5) are simultaneously ejected from the nozzle (5). Hisatsune discloses the adhesive is uniformly applied to the wire, and the nozzle device is easy to operate and improves efficiency of the process (page 3). Hisatsune discloses an adhesive extruder (8) pushes the adhesive out of the nozzle (5) but is silent as to controlling an air pressure for pushing out the adhesive.

(Office Action of 7/22/2011, page 4).

Hisatsune discloses a method of sticking two plates together with putting a space piece between them for manufacturing sheet holders such as card cases. In order to improve efficiency, Hisatsune places a core coated with an adhesive, which is fed from a nozzle on a given position on the plate, piling the other plate on the core, pasting the plates together (Hisatsune, Abstract, PURPOSE). Thus, Hisatsune is in the field of **bonding two plates** together or in the field of **manufacturing a sheet holder** such as a card case.

When a reference under 35 USC §103 is relied upon, it must be analogous prior art (MPEP 2141.01(a)). The MPEP explains as follows:

The examiner must determine what is "analogous prior art" for the purpose of analyzing the obviousness of the subject matter at issue. **>"Under the correct analysis, any need or problem known in the field of endeavor at the time of the invention and addressed by the patent [or application at issue] can provide a reason for combining the elements in the manner claimed." *KSR International Co. v. Teleflex Inc.*, 550 U.S. ___, ___, 82 USPQ2d 1385, 1397 (2007). Thus a reference in a field different from that of applicant's endeavor may be reasonably pertinent if it is one which, because of the

matter with which it deals, logically would have commended itself to an inventor's attention in considering his or her invention as a whole.

(MPEP 2141.01(a) I).

Hisatsune is a reference in a field completely different from that of applicant's endeavour. Also, Hisatsune is not reasonably pertinent because the matter with which Hisatsune deals, logically would not have commended itself to the present inventor's attention in considering his or her invention as a whole. Although Swiggett discloses an apparatus for scribing a conductor wiring to a surface of a substrate, the Swiggett's process uses a wire already coated with non-tacky adhesive coating. Therefore, Hisatsune's method has nothing to do with Swiggett's process which does not apply adhesive in the wiring process.

Thus, because Hisatsune is not analogous prior art, the rejection based on the combination including Hisatsune has not established a prima facie case of obviousness. Also, the Examiner's allegation is nothing but a typical example of an impermissible hindsight analysis. In this regard, the Examiner alleged responding to Applicant's previous response as follows:

Applicant argues Hisatsune is in the field of bonding two plates together or in the field of manufacturing a sheet holder, and is not analogous prior art.

Hisatsune's invention is the automatic coating and application of a coated wire to a substrate. Hisatsune is also in the field of applying adhesive coated wires, and the field of nozzles for applying coated wires. Furthermore, Hisatsune is solving the same problem as the claimed invention, improving the efficiency of applying a wire to a substrate by applying a coating of adhesive to the wire during application of the wire. Hisatsune is considered to be analogous prior art.

Applicant argues one would not be motivated to use expensive materials as optical fibers because it would destroy the intended purpose of Hisatsune. Hisatsune's purpose is to automatically coat and place a wire gap piece

avoiding the use of skilled workers. Using a particular type of wire would not destroy the indented purpose of Hisatsune's invention.

(Office Action of 12/09/2010, page 3). However, the Examiner's allegation is based on impermissible hindsight analysis. Instead of starting from the prior art, the Examiner's is simply trying to somehow connect Hisatsune and the present invention. Although the Examiner alleges that "Hisatsune is solving the same problem as the claimed invention, improving the efficiency of applying a wire to a substrate by applying a coating of adhesive to the wire during application of the wire," such problem did not exist in the prior art such as Swiggett.

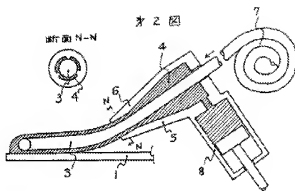
The present invention is directed to an **optical fiber wiring** method on a substrate and an optical fiber wiring apparatus. There is no reason that the field of **manufacturing a sheet holder** such as a card case draw the attention of a person of ordinary skill in the art of an **optical fiber wiring**.

Moreover, Claim 1 recites "wherein an amount of the adhesive applied to the optical fiber is held constant by **controlling an air pressure** for pushing out the adhesive." Similarly, claim 7 recites "a **controller to control an air pressure** for pushing out the adhesive."

The only explanation in Hisatsune regarding control is as follows:

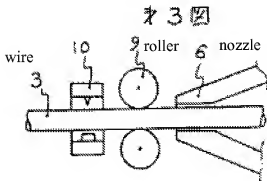
Figure 2 shows the adhesion method of the present invention in principal. The wire on which the adhesive is applied by a nozzle device (5) is placed on a plate. More specifically, the core wire is wound on a core wire hoop (7), and is sequentially provided through a nozzle (6). The adhesive is extruded through an adhesive extruder (8), and is simultaneously extruded from a nozzle (6). In this manner, while the adhesive (4) is applied to the core wire (3), it is supplied from the nozzle, and the plate (1) is placed in a desired position. . . .

(Hisatsune translation, page 2, line 18 et seq.).



As shown in Fig. 2 of Hisatsune, the extruder (8) is directly touching the adhesive (4) in the nozzle device (5). Thus, Hisatsune does not teach or suggest “a controller to control air pressure for pushing out the adhesive.”

Also, Fig. 3 of Hisatsune discloses rollers (9) for ejecting a wire (3) from a nozzle (6). Since Hisatsune discharges a large amount of the adhesive to bond two plates, it can dispose the rollers (9) in front of the nozzle (6). This architectural difference further makes it clear that the technical field of Hisatsune is different from that of the present invention.



Then the Examiner further cited Ikushima, and alleged as follows:

Ikushima discloses a method of delivering a fixed quantity of liquid from a nozzle. Ikushima discloses there are known alternative methods for controlling the amount of liquid that is delivered through the nozzle (paragraph 0002). One method uses a plunger type device (as is used in Hisatsune) wherein a plunger is moved to pressurize the liquid so that a desired amount of liquid is ejected from the nozzle. An alternative method uses an air type delivering device wherein air is applied at a regulated pressure to the liquid in the reservoir vessel so that a desired amount of liquid is delivered from the nozzle.

(Office Action of 7/22/2011, page 4).

Ikushima, does not remedy the deficiencies of Swiggett and Hisatsune. Ikushima describes as follows:

With the view of solving the above-described problems experienced in the prior art, an object of the present invention is to provide a method and **apparatus for ejecting a liquid, by which an ejection port of an ejection valve is mechanically opened and closed, and hence which can more positively shut off the liquid at the time of stopping the ejection of the liquid** and can securely avoid a leakage of the liquid without a risk of breaking fillers.

(Ikushima, column 1, lines 49-55). Thus, Ikushima discloses a method of dispensing a fixed amount of liquid from a nozzle when **the ejection port of the ejection valve is mechanically opened and closed**. Such dispensing of a fixed amount of liquid in Ikushima has nothing to do with the constant application of adhesive on the optical fiber which is continuously fed through the nozzle.

It also should be noted that when a fiber passes through the nozzle, a certain amount of adhesive is also ejected from the nozzle together with the optical fiber even if the pressure is not given to the adhesive. The amount of the adhesive ejected from the nozzle changes depending on the velocity of the optical fiber. Therefore, it becomes possible to accurately control the

amount of the adhesive by controlling the air pressure according to the speed of the optical fiber. Even if the air pressure is held constant, it does not necessarily follow that the amount of the adhesive is kept constant when the speed of the optical fiber changes.

As explained above, there is no reason for a person of ordinary skill in the art to combine the teachings of Swiggett and Hisatsune and Ikushima. Also, even if Swiggett, Hisatsune and Ikushima are combined, the present invention will not be obtained.

For at least these reasons, claims 1 and 7 patentably distinguish over Swiggett, Hisatsune and Ikushima. Claims 3 and 4, depending from claim 1, also patentably distinguish over the cited references. The same thing can be said about claims 8 and 9, depending from claim 7.

2. Claims 2, 10, 11, 12 and 13 are not obvious over Swiggett, Hisatsune and Ikushima, and further in view of Keyworth et al. (US 5,534,101, "Keyworth") Under 35 U.S.C. 103(a).

Claims 2 and 12 depend from claim 1 and claims 10, 11 and 13 depend from claim 7. Therefore, these claims patentably distinguish over Swiggett, Hisatsune and Ikushima.

Keyworth was cited for allegedly disclosing "controlling the speed at which the nozzle is moved relative to the substrate, which will affect the rate at which the optical fiber needs to be fed" and "dispensing an adhesive coating that is UV curable and using a UV lamp to cure the adhesive," and "a device that dispenses a liquid using an air pressure controller (28)."

However, such disclosures of Keyworth do not remedy the deficiencies of Swiggett, Hisatsune and Ikushima.

For at least these reasons, claims 2, 10, 11, 12 and 13 patentably distinguish over Swiggett, Hisatsune, Ikushima and Keyworth.

3. Claim 5 is not obvious over Swiggett, Hisatsune and Ikushima and further in view of Hawkins (US 3,742,107) under 35 U.S.C. 103(a).

Claim 5 depends from claim 1. Therefore, claim 5 patentably distinguishes over Hisatsune, Swiggett, and Ikushima. As discussed above, the disclosure of Hawkins alleged by the Examiner does not remedy the deficiencies of Swiggett, Hisatsune and Ikushima.

Hawkins was cited for allegedly disclosing “a method of making an optical fiber” and that “glass fibers are well known,” and “polymeric optic fibers can be used and have the added benefit of increased strength and flexibility.”

However, such disclosures of Hawkins do not remedy the deficiencies of Swiggett, Hisatsune and Ikushima.

For at least these reasons, claim 5 patentably distinguishes over Swiggett, Hisatsune, Ikushima, and Hawkins.

4. Claims 6, and 10 are not obvious over Swiggett, Hisatsune and Ikushima and further in view of Yamaguchi et al. (US 2001/0011413, herein "Yamaguchi") under 35 U.S.C. 103(a).

Claim 6 depend from claim 1 and claim 10 depends from claim 7. These claims patentably distinguish over Swiggett, Hisatsune and Ikushima for the same reasons discussed above.

Yamaguchi is cited for allegedly disclosing a method of wiring a substrate and the method comprising using a UV curable adhesive to secure a wire to a substrate and curing the adhesive by applying UV light after the wire is applied to the substrate (paragraph 0126).

However, such disclosures of Yamaguchi do not remedy the deficiencies of Swiggett, Hisatsune and Ikushima.

For at least these reasons, claim 6 and 10 patentably distinguishes over Swiggett, Hisatsune, Ikushima, and Yamaguchi.

5. Claims 12 and 13 are not obvious over Swiggett, Hisatsune and Ikushima, and further in view of Inaba et al. (US 2002/0112821, herein "Inaba") under 35 U.S.C. 103(a).

Claim 12 depend from claim 1 and claims 13 depends from claim 7. Therefore, these claims patentably distinguish over Swiggett, Hisatsune and Ikushima for at least the same reasons discussed above.

Inaba has been cited for allegedly disclosing a method and apparatus for applying an adhesive and also discloses a syringe (113) with a nozzle (112) for dispensing the adhesive further discloses a pipe (passage 116) for supplying air from the air supply to the syringe to press out the adhesive (paragraphs 0003-0004).

However, such disclosures of Inaba do not remedy the deficiencies of Swiggett, Hisatsune and Ikushima.

For at least these reasons, claims 12 and 13 patentably distinguish over Swiggett, Hisatsune, Ikushima and Inaba.

6. Claims 1, 3, 4, 7-9 are not Obvious Over Hisatsune in view of Swiggett et al. and Ikushima et al. under 35 U.S.C. 103(a).

In the Office Action of 7/22/2011, the Examiner alleged:

With respect to claim 1, Hisatsune discloses a method of applying a wire. The method comprises feeding a wire (3) to pass through an adhesive ejecting nozzle (nozzle device 5) having an inner diameter larger than an outer diameter of the wire (3) to thereby obtain the wire coated with the adhesive (4) on the fiber surface, and forming the wiring on a surface of a substrate (1) by simultaneously ejecting the wire and the adhesive (Figure 2; page 2-3). Hisatsune discloses the adhesive is uniformly applied to the wire, and the nozzle device is easy to operate and improves efficiency of the process (page 3). Hisatsune discloses the wire can be any of plastic, paper and metal, but is silent as to the wire being an optical fiber. Hisatsune discloses an adhesive extruder (8) pushes the adhesive out of the nozzle (5) but is silent as to controlling an air pressure for pushing out the adhesive.

Swiggett discloses a method for applying conductor wiring to a substrate. Swiggett discloses the conductor wiring may be wires for electrical conduction or optical fiber for conducting light (column 1, lines 10-13). The method comprises feeding an optical fiber through a guide onto a substrate where it is bonded with an adhesive to form the optical wiring.

Ikushima discloses a method of delivering a fixed quantity of liquid from a nozzle. Ikushima discloses there are known alternative methods for controlling the amount of liquid that is delivered through the nozzle (paragraph 0002). One method uses a plunger type device (as is used in Hisatsune) wherein a plunger is moved to pressurize the liquid so that a desired amount of liquid is ejected from the nozzle. An alternative method uses an air type delivering device wherein air is applied at a regulated pressure to the liquid in the reservoir vessel so that a desired amount of liquid is delivered from the nozzle.

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the method of Hisatsune by applying a wire that is an optical fiber as taught by Swiggett as a substitution of known wire types to achieve a known desired result is within the purview of one of ordinary skill, and to modify the method of Hisatsune by controlling the air pressure for pushing out the adhesive rather than the plunger type device as the air pressure controller and plunger type device are taught as

alternatives by Ikushima and a substitution of known alternatives to achieve a known result is within the purview of one of ordinary skill

(Office Action of 7/22/2011, pages 11-13).

Hisatsune Not Analogous Prior Art

When a reference under 35 USC §103 is relied upon, it must be analogous prior art

(MPEP 2141.01(a)). The MPEP explains as follows:

The examiner must determine what is "analogous prior art" for the purpose of analyzing the obviousness of the subject matter at issue. **>"Under the correct analysis, any need or problem known in the field of endeavor at the time of the invention and addressed by the patent [or application at issue] can provide a reason for combining the elements in the manner claimed." *KSR International Co. v. Teleflex Inc.*, 550 U.S. ___, ___, 82 USPQ2d 1385, 1397 (2007). Thus a reference in a field different from that of applicant's endeavor may be reasonably pertinent if it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering his or her invention as a whole.

(MPEP 2141.01(a) I). The present invention is directed to an **optical fiber wiring** method on a substrate and an optical fiber wiring apparatus.

On the other hand, Hisatsune discloses a method of sticking two plates together with putting a space piece between them. In order to improve efficiency, Hisatsune places a core coated with an adhesive, which is fed from a nozzle on a given position on the plate, piling the other plate on the core, pasting the plates together (Abstract, PURPOSE). Thus, Hisatsune is in the field of **bonding two plates** together or in the field of **manufacturing a sheet holder** such as a card case.

Hisatsune is a reference in a field completely different from that of applicant's endeavour. Also, Hisatsune is not reasonably pertinent because the matter with which it deals, logically

would not have commended itself to the present inventor's attention in considering his or her invention as a whole. Although Swiggett discloses an apparatus for scribing a conductor wiring to a surface of a substrate, the apparatus has nothing to do with Hisatsune's method.

Thus, for at least the reason that Hisatsune is not analogous prior art, the rejection based on the combination including Hisatsune has not established a prima facie case of obviousness. Also, the Examiner's allegation is nothing but a typical example of an impermissible hindsight analysis.

Additional reference, Ikushima, does not make the present invention obvious. Ikushima discloses a method of dispensing a constant amount of liquid from a nozzle. However, there is no reason why Ikushima's method of dispensing a constant amount of liquid from a nozzle is combined with Swiggett's method and apparatus for applying conductor wiring to a substrate.

Responding to Applicant's previously submitted similar argument, the Examiner alleged as follows:

Applicant argues Hisatsune is in the field of bonding two plates together or in the field of manufacturing a sheet holder, and is not analogous prior art. Hisatsune's invention is the automatic coating and application of a coated wire to a substrate. Hisatsune is also in the field of applying adhesive coated wires, and the field of nozzles for applying coated wires. Furthermore, Hisatsune is solving the same problem as the claimed invention, improving the efficiency of applying a wire to a substrate by applying a coating of adhesive to the wire during application of the wire. Hisatsune is considered to be analogous prior art.

Applicant argues one would not be motivated to use expensive materials as optical fibers because it would destroy the intended purpose of Hisatsune. Hisatsune's purpose is to automatically coat and place a wire gap piece avoiding the use of skilled workers. Using a particular type of wire would not destroy the intended purpose of Hisatsune's invention.

(Office Action of 12/09/2010, page 3). However, the Examiner's allegation is based on impermissible hindsight analysis. The present invention is directed to an **optical fiber wiring** method on a substrate and an optical fiber wiring apparatus. There is no reason that the field of **manufacturing a sheet holder** such as a card case draw the attention of a person of ordinary skill in the art of an **optical fiber wiring**.

The Examiner alleged that Swiggett teaches that wire application devices can apply a variety of wires including optical fibers. However, the description in Swiggett is irrelevant to Hisatsunc. Swiggett describes as follows:

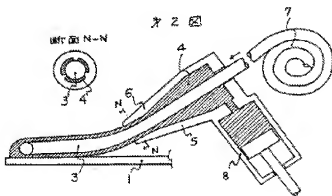
This invention relates to apparatus for making circuit boards and, more particularly, to apparatus for making circuit boards in which insulated conductors are applied and bonded to a nonconductive surface to form a conductive path between contact points thereon. The conductors may be **wires for electrical conduction or optical fibers for conducting light** between points or may be a mixture thereof.

(Swiggett et al., column 1, lines 6-13). Swiggett simply indicates that wires for electrical conduction and optical fibers for conducting light are analogous. Nothing in Swiggett indicates that the field of **bonding two plates** together or in the field of **manufacturing a sheet holder** such as a card case is an analogous field of optical fiber wiring. Thus, despite the Examiner's allegation, the fact does not change that Hisatune is not analogous prior art.

Control of Air Pressure

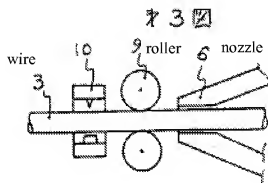
Claim 1 also recites “wherein an amount of the adhesive applied to the optical fiber is held constant by **controlling an air pressure** for pushing out the adhesive.” Similarly, claim 7 recites “a **controller to control an air pressure** for pushing out the adhesive.”

The Examiner’s allegation on this point regarding Hisatsune is not correct. As shown above, the examiner alleged that Hisatsune discloses controlling the pressure in the nozzle to push out a constant amount of adhesive using a plunger/controller (8), and is silent as to controlling the air pressure for pushing out the adhesive. However, the only explanation in Hisatsune is as follows: “The adhesive applied core wire is placed on a plate. In other words, the core wire is wound on the core wire hoop 7, and supplied continuously. On the other hand, the adhesive is extruded by adhesive extruder 8 through the nozzle 6 likewise.”



Also, as shown by Fig. 2 of Hisatsune, the plunger (8) is directly touching the adhesive (4) in the nozzle device (5). Thus, Hisatsune does not teach or suggest “a controller to control air pressure for pushing out the adhesive.”

Also, Fig. 3 of Hisatsune discloses rollers (9) for ejecting a wire (3) from a nozzle (6). Since Hisatsune discharges a large amount of the adhesive to bond two plates, it can dispose the rollers (9) in front of the nozzle (6). This architectural difference further makes it clear that the technical field of Hisatsune is different from this invention.



It also should be noted that not only the adhesive but a fiber is simultaneously ejected from the nozzle. In other words, even if the pressure is not given to the adhesive, a certain amount of the adhesive is ejected from the nozzle in conjunction with the ejection of the optical fiber. That is, the amount of the adhesive ejected from the nozzle is being changed according to the velocity of the optical fiber. Therefore, the air pressure must be controlled depending on the ejection speed of the optical fiber. Even if the air pressure is held constant, it does not follow that the amount of the adhesive is kept constant.

Thus, even if Ikushima is combined with Swiggett et al., Hisatsune, the same results as this invention will not be obtained.

For at least these reasons, claims 1 and 7 patentably distinguish over Hisatsune, Swiggett, and Ikushima.

7. Claims 2, 10, 11, 12 and 13 are not obvious over Hisatsune, Swiggett and Ikushima, and further in view of Keyworth et al. under 35 U.S.C. 103(a).

Claims 2 and 12 depend from claim 1 and claims 10, 11 and 13 depend from claim 7. Therefore, these claims patentably distinguish over Hisatsune, Swiggett, and Ikushima.

Keyworth was cited for allegedly disclosing “controlling the speed at which the nozzle is moved relative to the substrate, which will affect the rate at which the optical fiber needs to be fed” and “dispensing an adhesive coating that is UV curable and using a UV lamp to cure the adhesive,” and “a device that dispenses a liquid using an air pressure controller (28).”

However, such disclosures of Keyworth do not remedy the deficiencies of Hisatsune, Swiggett, and Ikushima.

For at least these reasons, claims 2, 10, 11, 12 and 13 patentably distinguish over Hisatsune, Swiggett, Ikushima and Keyworth.

8. Claim 5 is not obvious over Hisatsune, Swiggett and Ikushima and further in view of Hawkins under 35 U.S.C. 103(a).

Claim 5 depends from claim 1. Therefore, claim 5 patentably distinguishes over Hisatsune, Swiggett, and Ikushima.

Hawkins was cited for allegedly disclosing “a method of making an optical fiber” and that “glass fibers are well known,” and “polymeric optic fibers can be used and have the added

benefit of increased strength and flexibility.” However, such disclosures of Hawkins do not remedy the deficiencies of Hisatsune, Swiggett and Ikushima.

For at least these reasons, claim 5 patentably distinguishes over Hisatsune, Swiggett, Ikushima and Hawkins.

9. Claims 6, and 10 are not obvious over Hisatsune, Swiggett and Ikushima and further in view of Yamaguchi et al. under 35 U.S.C. 103(a).

Claim 6 depends from claim 1 and claim 10 depends from claim 7. Therefore, these claims patentably distinguish over Hisatsune, Swiggett, and Ikushima.

Yamaguchi is cited for allegedly disclosing a method of wiring a substrate and the method comprising using a UV curable adhesive to secure a wire to a substrate and curing the adhesive by applying UV light after the wire is applied to the substrate (paragraph 0126). However, such disclosures of Yamaguchi do not remedy the deficiencies of Hisatsune, Swiggett, and Ikushima.

For at least these reasons, claim 6 and 10 patentably distinguishes over Hisatsune, Swiggett, Ikushima, and Yamaguchi.

10. Claims 12 and 13 are not obvious over Hisatsune, Swiggett and Ikushima, and further in view of Inaba et al. under 35 U.S.C. 103(a).

Claim 12 depend from claim 1 and claim 13 depends from claim 7. Therefore, these claims patentably distinguish over Hisatsune, Swiggett, and Ikushima.

Inaba has been cited for allegedly disclosing a method and apparatus for applying an adhesive and also discloses a syringe (113) with a nozzle (112) for dispensing the adhesive and further discloses a pipe (passage 116) for supplying air from the air supply to the syringe to press out the adhesive (paragraphs 0003-0004).

However, such disclosures of Inaba do not remedy the deficiencies of Hisatsune, Swiggett, and Ikushima.

For at least these reasons, claims 12 and 13 patentably distinguish over Hisatsune, Swiggett, Ikushima, and Inaba.

(VIII) CONCLUSION

For the foregoing reasons, the Examiner has failed to establish a prima facie case of obviousness in the rejection of the present claims. The Honorable Board is respectfully requested to reverse the rejection of the Examiner.

If this paper is not timely filed, appellants hereby petition for an appropriate extension of time. The fee for any such extension may be charged to Deposit Account No. 50-2866, along with any other additional fees that may be required with respect to this paper.

Respectfully submitted,
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Enclosures: Claims Appendix
Evidence Appendix
Related Proceedings Appendix

(IX) CLAIMS APPENDIX

1. (Rejected): An optical fiber wiring method comprising the steps of:

feeding an optical fiber to pass through an adhesive ejecting nozzle having an inner diameter larger than an outer diameter of the optical fiber, to thereby obtain the optical fiber coated with the adhesive on a fiber surface, wherein an amount of the adhesive applied to the optical fiber is held constant by controlling an air pressure for pushing out the adhesive; and

forming optical wiring on a surface of a substrate by simultaneously ejecting the optical fiber and the adhesive.
2. (Rejected): The optical fiber wiring method according to Claim 1, wherein the amount of the adhesive is held constant by further controlling a speed at which the optical fiber is introduced.
3. (Rejected): The optical fiber wiring method according to Claim 1 or 2, wherein the optical wiring is formed on the surface of the substrate by relative movement of the substrate and the nozzle where the substrate is held fixed and the nozzle is moved horizontally.
4. (Rejected): The optical fiber wiring method according to Claim 1 or 2, wherein the optical wiring is formed on the surface of the substrate by relative movement of the substrate and the nozzle where the nozzle is held fixed and the substrate is moved horizontally.

5. (Rejected): The optical fiber wiring method according to Claim 1 or 2, wherein the optical fiber is a polymer optical fiber.

6. (Rejected): The optical fiber wiring method according to Claim 1 or 2, wherein the adhesive is of the type being hardened with irradiation of an ultraviolet ray, and the optical wiring is formed on the substrate by irradiating an ultraviolet ray after the optical fiber coated with the adhesive on the fiber surface has been wired on the substrate.

7. (Rejected): An optical fiber wiring apparatus comprising:
a liquid material ejecting unit provided with a liquid material ejecting nozzle having an inner diameter larger than an outer diameter of an optical fiber and allowing the optical fiber and the adhesive to be simultaneously fed through the nozzle;
a controller to control an air pressure for pushing out the adhesive; and
a stage for supporting a substrate on which the optical fiber is to be wired, wherein the liquid material ejecting unit and the stage are movable relative to each other.

8. (Rejected): The optical fiber wiring apparatus according to Claim 7, wherein the stage for supporting the substrate is fixed, and the nozzle is movable to form optical wiring on the substrate with the relative movement.

9. (Rejected): The optical fiber wiring apparatus according to Claim 7, wherein the nozzle is fixed, and the stage for supporting the substrate is movable to form optical wiring on the substrate with the relative movement.

10. (Rejected): The optical fiber wiring apparatus according to any one of Claims 7 to 9, wherein the adhesive is of the type being hardened with irradiation of an ultraviolet ray, and the apparatus further comprises an ultraviolet ray irradiation unit for irradiating an ultraviolet ray to harden the adhesive after the optical fiber coated with the adhesive on the fiber surface has been wired on the substrate.

11. (Rejected): The optical fiber wiring apparatus according to any one of Claims 7 to 9, wherein the controller controls a speed at which the optical fiber is introduced such that an amount of the adhesive is held constant.

12. (Rejected): The optical fiber wiring method according to Claim 1 or 2, wherein the optical fiber is passed through a storage section which is connected with the nozzle and a pipe for feeding air.

13. (Rejected): The optical fiber wiring apparatus according to any one of Claims 7 to 9, wherein the liquid material ejecting unit including a storage section which is connected with the nozzle and a pipe for feeding air.

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(X) EVIDENCE APPENDIX

None Presented.

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(XI) RELATED PROCEEDINGS APPENDIX

No related proceedings.